

ABSTRACT

This invention comprises devices and methods for increasing the sensitivity of detection of analytes. Analytes are placed near enhancing structures on a substrate. The enhancing structures include fractal particle aggregates made of metals such as gold and silver.

- 5 Analytes can be concentrated near enhancing structures using methods including spin-concentration, electroconcentration, and/or affinity methods. Affinity methods include hydrophobic (non-polar) interaction and hydrophilic (polar) interaction. By selecting appropriate substrate, enhancing structure, solvent and analyte, the devices and methods of this invention can increase the sensitivity of detection and quantitation of analytes using
- 10 electromagnetic spectroscopy, including Raman spectroscopy.

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